

CLAIMS

1. A dummy wafer comprising a carbon fiber reinforced plastic.
2. The dummy wafer according to claim 1 having a wafer substrate including a carbon fiber reinforced plastic.
3. The dummy wafer according to claim 2, wherein said carbon fiber reinforced plastic includes carbon fibers having a tensile modulus of 400 GPa or higher.
4. The dummy wafer according to claim 3, wherein said carbon fibers are pitch-based carbon fibers.
5. The dummy wafer according to claim 2, wherein said wafer substrate has a plurality of CFRP layers which are layers consisting of a carbon fiber reinforced plastic.
6. The dummy wafer according to claim 5, wherein said wafer substrate has a plurality of one-dimensionally reinforced CFRP layers, said one-dimensionally reinforced CFRP layer being a layer consisting of a carbon fiber reinforced plastic consisting of a cured and shaped product of a unidirectional prepreg in
5 which carbon fibers are oriented in one direction, and
the tensile modulus of the carbon fibers in a part of layers among said plurality of one-dimensionally reinforced CFRP layers is higher than the tensile modulus of the carbon fiber in the other layers.
7. The dummy wafer according to claim 6, wherein
said wafer substrate has two skin layers each located on principal surface side, and a core layer located between said two skin layers;
both of said two skin layers have a plurality of said one-dimensionally
5 reinforced CFRP layers;

when the orientation direction of carbon fibers in one of the two outermost CFRP layers, which are one-dimensionally reinforced CFRP layers located closest to the principal surface side in each of said two skin layers, is made to be a reference direction, the orientation direction of carbon fibers in the other outermost CFRP layer falls within an angle range from -20° to $+20^{\circ}$ with respect to the reference direction;

the tensile modulus of carbon fibers in both the two outermost CFRP layers is 200 GPa to 600 GPa;

both the two skin layers have a one-dimensionally reinforced CFRP layer containing carbon fibers oriented in an angle range from $+75^{\circ}$ to $+90^{\circ}$ with respect to the reference direction and having a tensile modulus of 400 GPa to 1000 GPa and higher than the tensile modulus of carbon fibers in either outermost CFRP layer and/or a one-dimensionally reinforced CFRP layer containing carbon fibers oriented in an angle range from -75° to -90° with respect to the reference direction and having a tensile modulus of 400 GPa to 1000 GPa and higher than the tensile modulus of carbon fibers in either outermost CFRP layer; and

said core layer has a one-dimensionally reinforced CFRP layer containing carbon fibers oriented in an angle range from $+30^{\circ}$ to $+60^{\circ}$ with respect to the reference direction and having a tensile modulus of 400 GPa to 1000 GPa, and/or a one-dimensionally reinforced CFRP layer containing carbon fibers oriented in an angle range from -30° to -60° and having a tensile modulus of 400 GPa to 1000 GPa.

8. The dummy wafer according to claim 7, wherein the thickness of each of said two skin layers is 10% to 45% the total thickness of said two skin layers and the core layer.

9. A dummy wafer comprising a wafer substrate including a carbon fiber reinforced plastic, wherein

said wafer substrate has two skin layers each located on principal surface side, and a core layer located between said two skin layers;

5 both of said two skin layers have a plurality of one-dimensionally reinforced CFRP layers, said one-dimensionally reinforced CFRP layer being a layer consisting of a carbon fiber reinforced plastic consisting of a cured and shaped product of a unidirectional prepreg in which carbon fibers are oriented in one direction;

10 when the orientation direction of carbon fibers in one of the two outermost CFRP layers, which are one-dimensionally reinforced CFRP layers located closest to the principal surface side in each of said two skin layers, is made to be a reference direction, the orientation direction of carbon fibers in the other outermost CFRP layer falls within an angle range from -20° to $+20^{\circ}$ with respect to the reference direction;

15 the tensile modulus of carbon fibers in both the two outermost CFRP layers is 200 GPa to 600 GPa;

both the two skin layers have a one-dimensionally reinforced CFRP layer containing carbon fibers oriented in an angle range from $+75^{\circ}$ to $+90^{\circ}$ with respect to the reference direction and having a tensile modulus 1.5 times to 3.0 times that of carbon fibers of the outermost CFRP layer contained in the skin layer, and/or a one-dimensionally reinforced CFRP layer containing carbon fibers oriented in an angle range from -75° to -90° with respect to the reference direction and having a tensile modulus 1.5 times to 3.0 times that of carbon fibers of the outermost CFRP layer contained in the skin layer;

20

25

said core layer has a one-dimensionally reinforced CFRP layer containing carbon fibers oriented in an angle range from -20° to $+20^{\circ}$ with respect to the reference direction and having a tensile modulus of 200 GPa to 400 GPa; and

30 said core layer also has a one-dimensionally reinforced CFRP layer containing carbon fibers oriented in an angle range from $+75^{\circ}$ to $+90^{\circ}$ with respect to the reference direction and having a tensile modulus of 200 GPa to 400 GPa and/or a one-dimensionally reinforced CFRP layer containing carbon fibers oriented in an angle range from -75° to -90° with respect to the reference
35 direction and having a tensile modulus of 200 GPa to 400 GPa.

10. The dummy wafer according to claim 9, wherein at least one of said two skin layers further has a one-dimensionally reinforced CFRP layer containing carbon fibers oriented in an angle range from $+30^{\circ}$ to $+60^{\circ}$ with respect to the reference direction and having a tensile modulus 1.5 times to 3.0 times that of
5 carbon fibers of the outermost CFRP layer contained in the skin layer, and/or a one-dimensionally reinforced CFRP layer containing carbon fibers oriented in an angle range from -30° to -60° with respect to the reference direction and having a tensile modulus 1.5 times to 3.0 times that of carbon fibers of the outermost CFRP layer contained in the skin layer.

11. The dummy wafer according to any one of claims 6 to 10 further comprising a carbon fiber cloth layer on each of the principal surfaces.

12. The dummy wafer according to any one of claims 1 to 11, wherein the matrix resin contained in said carbon fiber reinforced plastic contains an epoxy resin composition that contains diaminodiphenylsulfone as a curing agent.

13. The dummy wafer according to any one of claims 2 to 12, wherein said wafer substrate has a processed surface, and

has a coating layer that coats said processed surface and consists of a resin that has resistance against polar solvent and cures at a temperature of

5 70°C or lower.